

PROFESSIONAL SERIES POWER AMPLIFIERS

PC1002

OPERATING MANUAL



The PC1002 is not just "another big amplifier", it is an exciting new approach to high power sound. Yamaha's leadership is clearly demonstrated by the PC1002's professional features, sophisticated design and uncompromising performance.

The PC1002's performance is as impressive as its features. At a sustained output of 100 watts into 8 ohms (for each channel), there is plenty of punch to reproduce the powerful peaks essential to clean studio monitoring. High power handling also makes the PC1002 an unbeatable choice for live rock or disco sound systems, where an amplifier can really "cook" all night long. Power alone is no virtue; the PC1002 has ultra-low distortion, less than 0.01% THD at ½ rated power – the kind of low distortion that is undetectable by even the most critical listeners.

A high damping factor of better than 180 at 1kHz reduces the tendency for speaker cone overshoot, giving tighter and better defined bass response. On the other end, the PC1002's frequency response extends well beyond 50 kHz, enabling it to accurately reproduce the most complex musical waveforms – even the tortuous output of today's synthesizers. However, high frequency response has not been achieved at the expense of stability; in fact, the PC1002 is rock steady. Even when connected to highly reactive multi-speaker loads, there is no tendency to shut down or "take off" into spurious oscillation.

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SPECIFICATIONS / DIMENSIONS

POWER OUTPUT LEVEL

Continuous average sine wave power with less than 0.05% THD.

20Hz to 20kHz

| | |
|----------------|-------------|
| Stereo, 8 ohms | 100W + 100W |
| Stereo, 4 ohms | 150W + 150W |
| Mono, 16 ohms | 200W |
| Mono, 8 ohms | 300W |

FREQUENCY RESPONSE

| | |
|---------------------------|----------------------------------|
| 10Hz to 50kHz, 8 ohms, 1W | 0 ⁺⁰ ₋₁ dB |
|---------------------------|----------------------------------|

POWER BAND WIDTH

| | |
|------------------------------|----------------|
| Stereo, 8 ohms, 50W 0.1% THD | 10Hz to 100kHz |
| Mono, 16 ohms, 100W 0.1% THD | 10Hz to 100kHz |

TOTAL HARMONIC DISTORTION

| | |
|------------------------------------|------------------|
| Stereo, 8 ohms, 50W, 1kHz | Less than 0.005% |
| Stereo, 8 ohms, 50W, 20Hz to 20kHz | Less than 0.01% |
| Mono, 16 ohms, 100W, 1kHz | Less than 0.005% |
| Mono, 16 ohms, 100W, 20Hz to 20kHz | Less than 0.01% |

INTER MODULATION DISTORTION

| | |
|-----------------------|-----------------|
| 70Hz 7kHz mixed 4 : 1 | |
| Stereo, 8 ohms 50W | Less than 0.01% |
| Mono, 16 ohms 100W | Less than 0.01% |

CROSSTALK (CHANNEL SEPARATION)

| | |
|----------------------------|------|
| Minimum attenuator setting | |
| 8 ohms, 50W, 1kHz | 80dB |
| 8 ohms, 50W, 20Hz to 20kHz | 70dB |

DAMPING FACTOR

| | |
|-----------------------|---------------|
| 8 ohms, 1kHz | More than 180 |
| 8 ohms, 20Hz to 20kHz | More than 100 |

S/N RATIO

| | |
|---------------------------|-------|
| Input shorted at 12.47kHz | 105dB |
| Input shorted at IHF A | 110dB |

RISE RATE

| | |
|---------------|----------------|
| Stereo 8 ohms | 30V/ μ sec |
| Mono 16 ohms | 55V/ μ sec |

INPUT SENSITIVITY

Input level which produces 100W output into 8 ohms
0dB (0.775V rms)

INPUT IMPEDANCE

| | |
|----------------------------|----------|
| Maximum attenuator setting | |
| Balanced input | 50 kohms |
| Unbalanced input | 25 kohms |

VOLTAGE GAIN

| | |
|----------------------------|--------|
| Maximum attenuator setting | 31.2dB |
|----------------------------|--------|

RELAY MUTING TIME

| | |
|---------------|-----------------------------------|
| From power on | 4 ⁺² ₋₁ sec |
|---------------|-----------------------------------|

INDICATORS

| | |
|--|-----|
| Power ON | LED |
| Protection (Relay OFF) | LED |
| Thermal Overload (85 \pm 5 degrees C.) | LED |
| Clipping (1% THD) | LED |

FRONT PANEL CONTROLS

| | |
|-------------------|---|
| Power Switch | Push-ON/Push-OFF |
| Input Attenuators | 22 detent positions in -1dB steps (0, -1, -2 ... -20, ∞) |

REAR PANEL CONTROLS

| | |
|-----------------------------------|---------------------------------------|
| Mode switch | STEREO/MONO |
| Pin 1 GND Switch (XLR connectors) | ON/OFF |
| Balance/Unbalance Switch | BALANCED (XLR)/ UNBALANCED (PHONE) |

POWER REQUIREMENTS

| | |
|------------------------|--------------------|
| U.S. & CANADIAN models | AC120V 60Hz |
| GENERAL model | AC220/240V 50/60Hz |

POWER CONSUMPTION

| | |
|------------------------|------|
| U.S. & CANADIAN models | 380W |
| GENERAL model | 840W |

DIMENSIONS

| | |
|-------------|---|
| (W x D x H) | 480 x 337 x 140mm (18-7/8" x 13-1/4" x 5-1/2") |
|-------------|---|

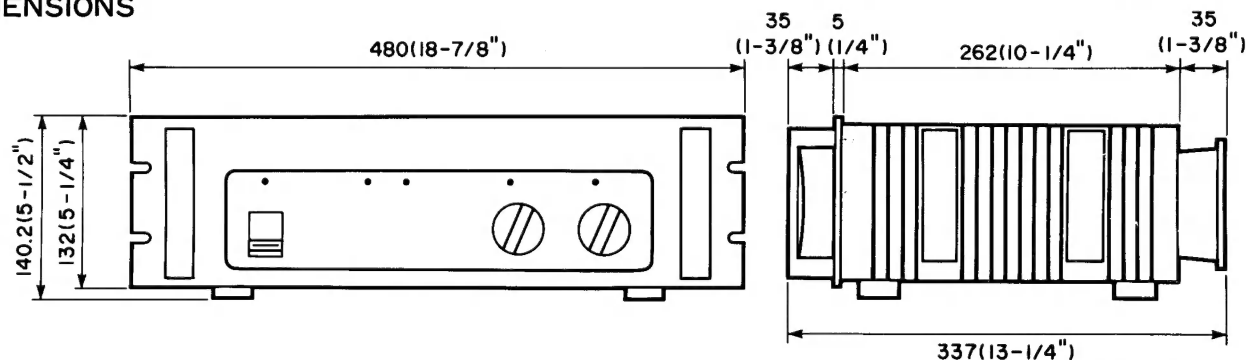
WEIGHT

15.5 kg (34.2 lbs)

NOTE: U.S. & CANADIAN Models must be operated into 8 ohms in stereo mode and 16 ohms in mono mode in accordance with safety regulations.

All specifications subject to change without notice.

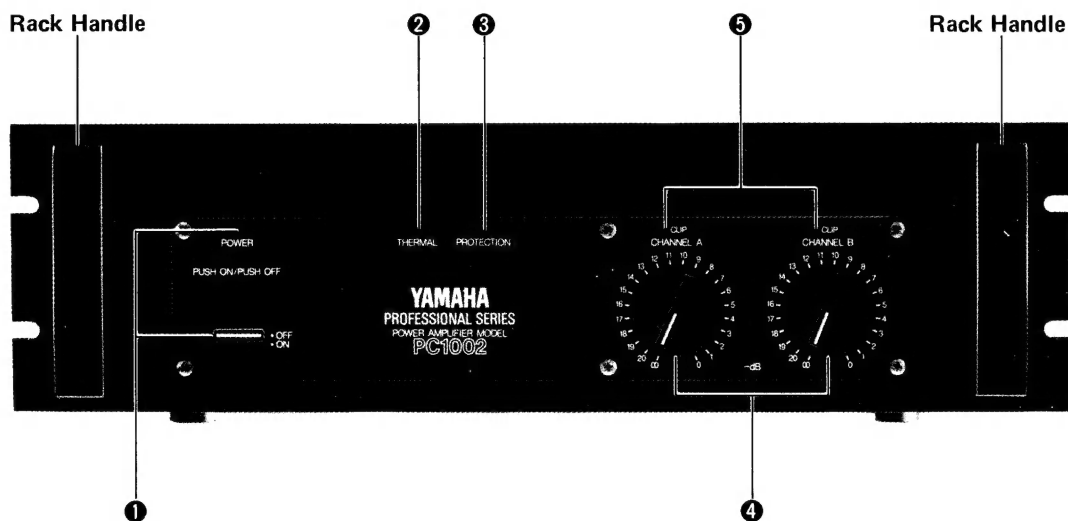
DIMENSIONS



Unit : mm (Inch)

WEIGHT: 15.5 kg (34.2 lbs)

FRONT PANEL



6 Accessories



1 POWER Switch/Indicator

Pressing this switch turns power to the amplifier ON and causes the power indicator to light. Pressing the POWER switch a second time turns the unit OFF.

2 THERMAL Indicator

This indicator lights if surface temperature of the main heat sink exceeds 85 ± 5 degrees centigrade.

3 PROTECTION Indicator

Lights for approximately 4 seconds after power is switched on, indicating that the protection circuitry is active. The speaker outputs are shut off while this indicator is lit. If the protection circuitry is activated for any reason during amplifier operation, the indicator will light and the speaker outputs will be shut off. Once the cause of protection activation has been remedied normal operation will resume automatically and the protection indicator will go out.

4 Input Attenuators

These attenuators adjust the sensitivity of the respective amplifier channel in 22, 1dB steps. Attenuation in the fully clockwise position is 0dB, and ∞ in the fully counterclockwise position.

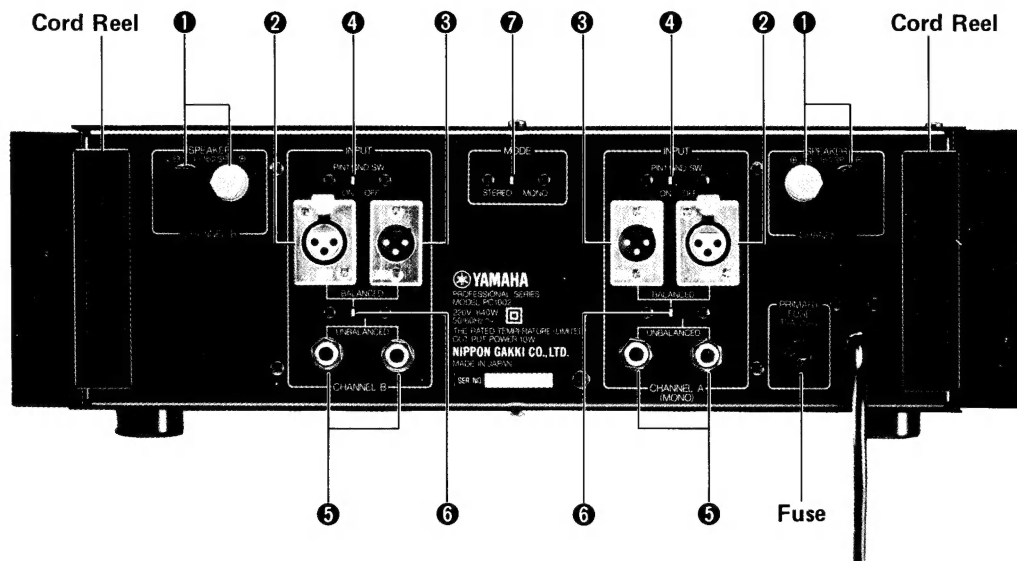
5 CLIP Indicator

This indicates that the amplifier is clipping due to excessive input signal levels.

6 Knob Lock Adaptors (Supplied)

The Knob Lock Adaptors prevent accidental alteration of attenuator settings once the appropriate settings have initially been made.

REAR PANEL



① SPEAKER Output Terminals

The red SPEAKER terminal is connected to the "+" input terminal of the speaker system used and the black SPEAKER terminal is connected to the "-" speaker input terminal.

② Canon Connectors (XLR-31)

These connectors are generally used as inputs. Pin 1 is shield, pin 2 is hot and pin 3 cold. Compatible connectors include Canon XLR-3-12C and Switchcraft 5C-1055A.

③ Canon Connectors (XLR-32)

Compatible with Canon XLR-3-11C or switchcraft 5C-1056A connectors, these connectors are useful for sending the input signal to other power amplifiers.

④ PIN 1 GND SW

Couples or decouples the canon connector earth line (pin 1, shield). Normally ON. In some cases where ground loops cause excessive hum, turning the ground switch OFF can interrupt the loop and reduce the hum.

⑤ Standard Phone Jacks

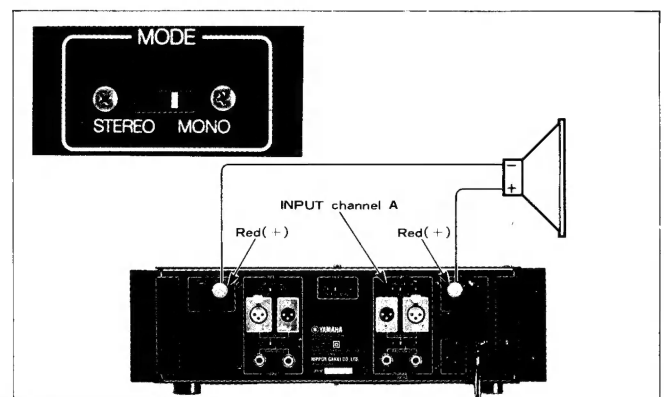
These jacks accept unbalanced input via standard 1/4" phone plugs. The BALANCED/UNBALANCED switch should be set to UNBALANCED when using these inputs. These jacks can also be used as send terminals.

⑥ BALANCED/UNBALANCED Switch

Determines which input connectors are active. In the BALANCED position, input signals are accepted via the balanced Canon connectors, and in the UNBALANCED position input is accepted via the unbalanced phone jacks.

⑦ MODE Selector Switch

Determines whether the amplifier is to operate in the stereo or mono (BTL) mode.

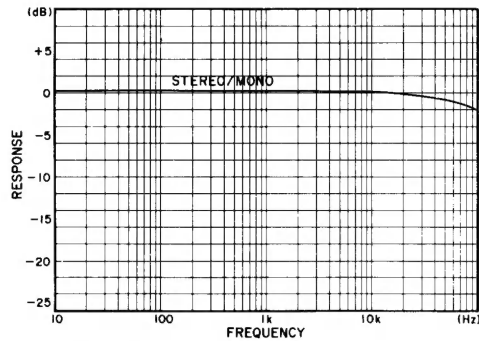


MONAURAL OPERATION

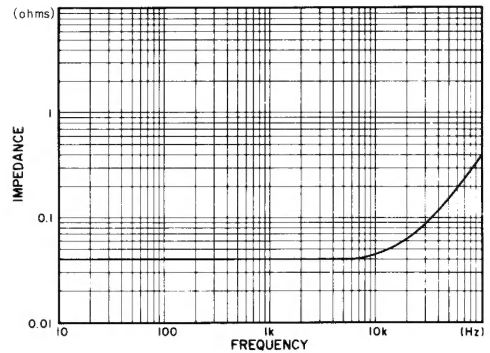
The PC1002 can easily be adapted for monaural (BTL) operation by setting the rear-panel MODE switch to MONO. In the MONO mode use the channel A input connectors and channel A attenuator for level control. The "+" terminal of the speaker system is connected to the channel A "+" output terminal and the "-" terminal of the speaker system is connected to the channel B "+" output terminal. Leave the channel A and B "-" output (SPEAKER) terminals and channel B input terminals unconnected.

PERFORMANCE GRAPHS

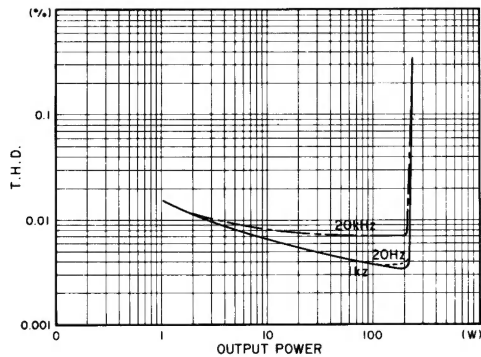
FREQUENCY RESPONSE LOAD 8 & 16 ohms
MODE ST/MONO
INPUT BALANCED



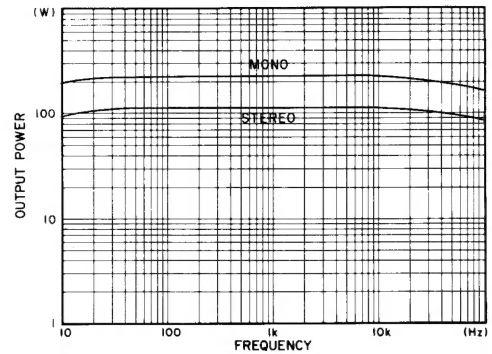
OUTPUT IMPEDANCE LOAD 8 ohms
MODE STEREO



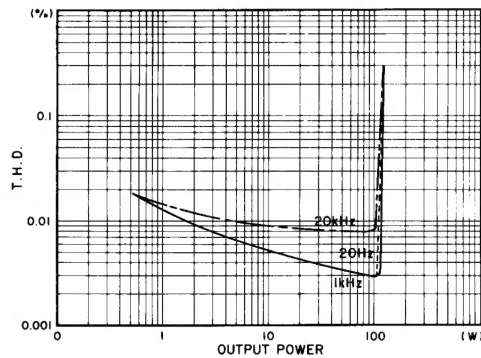
T.H. DISTORTION LOAD 16 ohms
MODE MONO
UNBALANCED INPUT



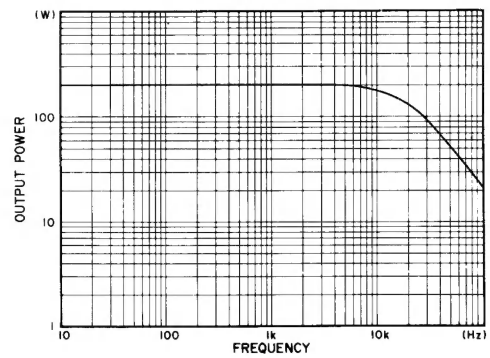
POWER BAND WIDTH THD = 0.05%
LOAD 8 & 16 ohms
MODE ST/MONO
ST, Both CH Driven



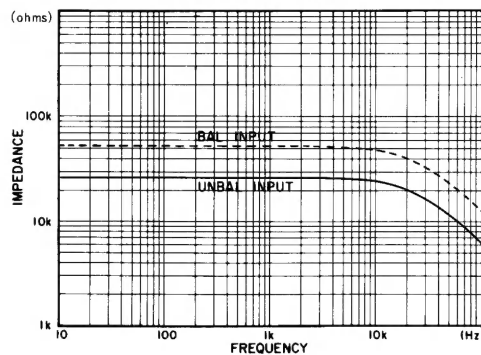
T.H. DISTORTION LOAD 8 ohms
MODE STEREO
Both CH Driven



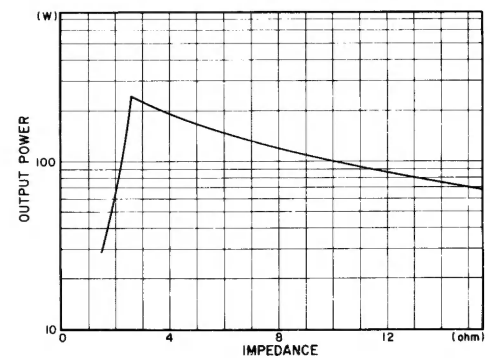
DAMPING FACTOR LOAD 8 ohms
MODE STEREO



INPUT IMPEDANCE LOAD 8 ohms
MODE STEREO

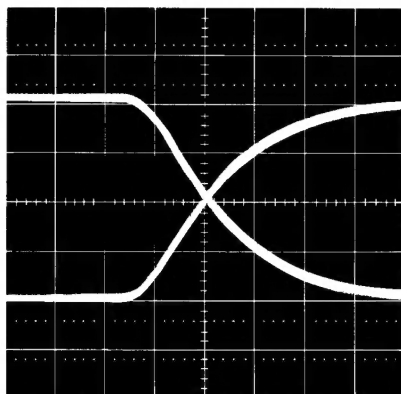


LOAD Vs OUTPUT POWER THD = 0.05%
MODE STEREO
Single CH Driven



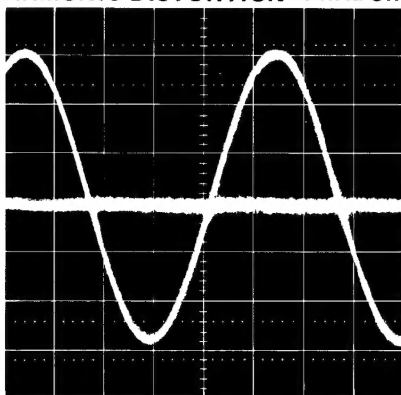
PERFORMANCE OSCILLOGRAPHS

SLEW RATE



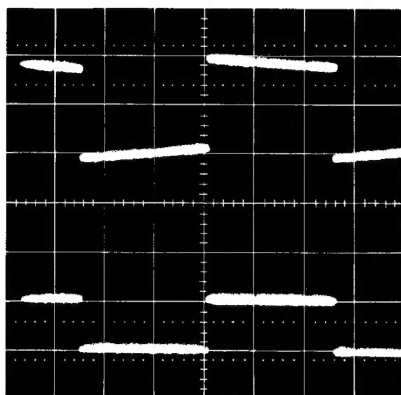
MODE STEREO
30V/ μ sec
LOAD 8 ohms

TOTAL HARMONIC DISTORTION 1 kHz SINE WAVE

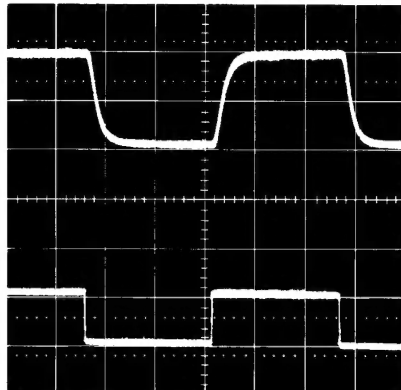


0.0018%
LOAD 8 ohms
MODE STEREO
50W

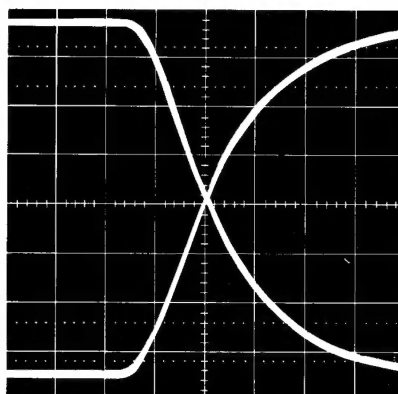
20 Hz SQUARE-WAVE RESPONSE



20 kHz SQUARE-WAVE RESPONSE

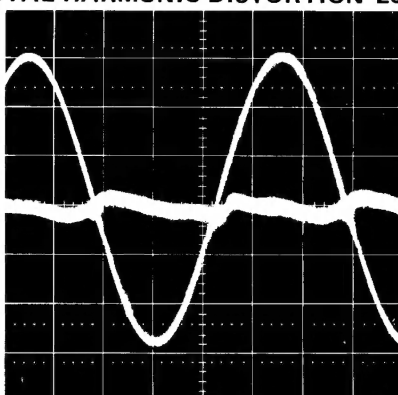


SLEW RATE



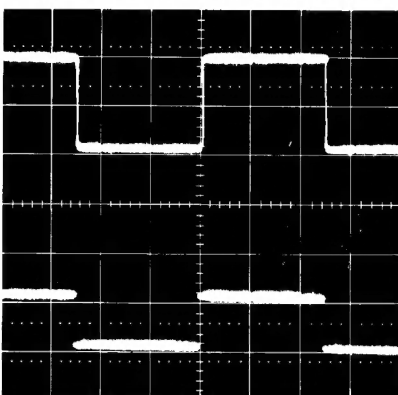
MODE MONO
55V/ μ sec
LOAD 16 ohms

TOTAL HARMONIC DISTORTION 20 kHz SINE WAVE

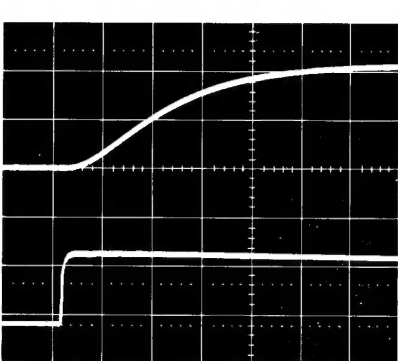


0.0054%
LOAD 16 ohms
MODE MONO
100W

1 kHz SQUARE-WAVE RESPONSE



RISE TIME



1kHz 1V (10–90%)
3 μ sec or better

* In each photo, output wave form is upside and input wave form is lower.
* Horizontal and vertical scales in each photo are option. But the scales in the photo of Rise time are 0.5V/Div (horizontal) and 1 μ sec/Div (vertical).
* MODE STEREO LOAD 8 ohms.

BLOCK DIAGRAM

PC1002

